## **CLAIMS**

- 1. A composition for detecting a target microorganism in a sample, comprising a conditionally detectable marker, wherein said marker is capable of providing a detectable signal when in contact with a viable microorganism, and a substrate for an enzyme that is substantially absent from the target microorganism.
- 2. The composition of claim 1, wherein said target microorganism is selected from the group consisting of bacteria, yeast, mold, fungi, protozoa, and viruses.
- 3. The composition of claim 2, wherein said target microorganism is bacteria.
- 4. The composition of claim 3, wherein said bacteria is selected from the group consisting of *salmonella*, *listeria*, *E.coli OH157*, *Campylobacter*, *Staphylococcus aerus*, *cryptsporidium*, and *giardia*.
  - 5. The composition of claim 4, wherein said bacteria is *Campylobacter*.
- 6. The composition of claim 1, wherein said conditionally detectable marker is detectable by a change in color.
- 7. The composition of claim 6, wherein said change in color is produced by the biochemical reduction of tetrazolium red.
- 8. The composition of claim 1, wherein said substrate comprises a signal moiety linked to the substrate, the signal moiety capable of providing a detectable signal when cleaved by substantially all non-target microorganisms.

9

- 9. The composition of claim 1, wherein said enzyme is an aminopeptidase.
- 10. The composition of claim 9, wherein said enzyme is an L-alanine-aminopeptidase.
- 11. The composition of claim 10, wherein said substrate is selected from the group consisting of L-Alanine-7-amido-4-methylcoumarin, L-Alanine-7-amido-4-methylcoumarin TFA, L-Alanine-7-amido-4-trifluoro-methylcoumarin TFA, L-Alanyl-L-alanyl-L-phenylalanine-7-amido-4-methylcoumarin, and L-Alanyl-L-alanyl-L-phenylalanine-7-amido-4-methylcoumarin TFA.
- 12. The composition of claim 11, wherein said substrate is L-alanine-7-amido-4-methylcoumarin.
- 13. The composition of claim 6, wherein said non-target microorganisms include substantially all non-*Campylobacter* species.
- 14. The composition of claim 1, further comprising a growth-supporting medium for the target microorganism.
- 15. The composition of claim 14, wherein said growth supporting medium contains all necessary nutrients and growth conditions to properly support the growth of the target microorganism.
- 16. The composition of claim 14, wherein said growth supporting medium contains antibiotics to suppress the growth of non-target microorganisms.
  - 17. A medium for detecting viable microorganisms in a sample comprising:
  - a.) a substrate for an aminopeptidase;

September 1

- b.) a conditionally detectable marker, wherein said marker is capable of providing a detectable signal when in contact with a viable microorganism;
- c.) a signal moiety linked to the substrate, said moiety providing a detectable signal when cleaved by said aminopeptidase from a microorganisms; and
- d.) a growth supporting medium for target or non-target microorganisms.
- 18. The medium of claim 17, wherein the aminopeptidase is L-alanine aminopeptidase.
- 19. The medium of claim 17, wherein said signal moiety is ortho-nitrophenyl, 4-methylumbelliferone, para-nitroanilide, 4-methoxy-.beta.-naphthylamide, 7-amido-4-methylcoumarin.
- 20. The medium of claim 17, wherein said enzyme substrate is: N-o-Acetyllysine-7-amido-4-methylcoumarin N-Acetyl-L-phenylalanyl-L-arginine-7-amido-4acetate; methylcoumarin hydrochloride; L-Alanine-7-amido-4-methylcoumarin; .beta.-Alanine-7-amido-4-methylcoumarin TFA; D-Alanine-7-amido-4-methylcoumarin TFA; L-Alanine-7-amido-4methylcoumarin TFA; L-Alanine-7-amido-4-methylcoumarin TFA; L-Alanine-7-amido-4trifluoro-methylcoumarin TFA; L-Alanyl-L-alanyl-L-phenylalanine-7-amido-4-methylcoumarin; L-Alanyl-L-alanyl-L-phenylalanine-7-amido-4-methylcoumarin TFA; D-Alanvl-L-leucyl-Llysine-7-amido-4-methylcoumarin Salt; L-Arginine-7-amido-4-methylcoumarin hydrochloride; L-Arginyl-L-arginine-7-amido-4-methylcoumarin trihydrochloride; L-Asparagine-7-amido-4methylcoumarin TFA; L-Aspartic acid-b-(7-amido-4-methylcoumarin); N-.alpha.-Benzoyl-DLarginine-7-amido-4-methylcoumarin; N-.alpha.-Benzoyl-L-arginine-7-amido-4-methylcoumarin; N-Benzoyl-L-phenylalanyl-L-valyl-L-arginine-7-amido-4-methylcoumarin; S-Benzyl-Lcysteine-7-amido-4-methylcoumarin; N-BOC-L-phenylalanyl-L-seryl-L-arginine-7-amido-4methylcoumarin acetate: N-BOC-L-vanyl-glycyl-L-arginine-7-amido-4-methylcoumarin hydrochloride; N-BOC-L-vanyl-L-leucyl-L-lysine-7-amido-4-methylcoumarin Salt; N-.alpha.-CBZ-L-arginine-7-amido-4-methylcoumarin hydrochloride; N-CBZ-glycylglycyl-L-leucine-7-

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amido-4-methylcoumarin; N-CBZ-glycyl-L-proline-7-amido-4-methylcoumarin; N-CBZ-glycyl-N-.beta.-CBZ-L-lysine-7-amido-4-L-prolyl-L-arginine-7-amido-4-methylcoumarin; methylcoumarin; N-CBZ-L-phenylalanyl-L-arginine-7-amido-4-methylcoumarin hydrochloride; N-CBZ-L-prolyl-L-arginine-7-amido-4-methylcoumarin hydrochloride; L-Citrulline-7-amido-4methylcoumarin hydrochloride; L-Citrulline-7-amido-4-methylcoumarin hydrochloride TFA; D-Glutamic acid-.gamma.-(7-amido-4-methylcoumarin); L-Glutamic acid-.alpha.-(7-amido-4methylcoumarin); L-Glutamine-7-amido-4-methylcoumarin hydrochloride; Glutaryl-glycyl-Larginine-7-amido-4-methylcoumarin hydrochloride; Glutaryl-glycylglycyl-L-phenylalanine-7-Glutaryl-L-phenylalanine-7-amido-4-methylcoumarin; Glycine-7amido-4-methylcoumarin; amido-4-methylcoumarin Glycyl-L-alanine-7-amido-4-methylcoumarin hydrochloride; hydrochloride; Glycyl-L-arginine-7-amido-4-methylcoumarin Salt; Glycylglycine-7-amido-4methylcoumarin hydrochloride; Glycyl-L-phenylalanine-7-amido-4-methylcoumarin; Glycyl-Lproline-7-amido-4-methylcoumarin hydrochloride; L-Histidine-7-amido-4-methylcoumarin; L-Isoleucine-7-amido-4-methylcoumarin; L-Isoleucine-7-amido-4-methylcoumarin TFA: L-Leucine-7-amido-4-methylcoumarin; L-Leucine-7-amido-4-methylcoumarin hydrochloride; L-L-Lysine-7-amido-4-methylcoumarin Leucyl-1-valvyl-1-tyrosine-7-amido-4-methylcoumarin; L-Ornithine-7-amido-4-L-Methionine-7-amido-4-methylcoumarin acetate: acetate: methylcoumarin carbonate; L-Phenylalanine-7-amido-4-methylcoumarin TFA; L-Proline-7-L-Prolyl-L-phenylalanyl-L-arginine-7-amido-4amido-4-methylcoumarin hydrochloride; methylcoumarin Salt; L-Pyroglutamic acid-7-amido-4-methylcoumarin; L-Serine-7-amido-4methylcoumarin hydrochloride; L-Seryl-L-tyrosine-7-amido-4-methylcoumarin hydrate; or, L-Tyrosine-7-amido-4-methylcoumarin.

- 21. The medium of claim 17, wherein the linkage is a peptide bond.
- 22. The medium of claim 17, wherein said signal moiety is a fluorescent moiety, and said fluorescent moiety is capable of providing a fluorescent signal.

4,70

- 23. The medium of claim 17, wherein said signal moiety is a chromogen moiety, and said chromogen moiety is capable of providing a signal in the visible, ultraviolet or infrared spectrum.
- 24. A method for detecting viable target microorganisms in a sample, the method comprising:
  - a.) providing a medium comprising the composition of claim 1;
- b.) inoculating the medium with the sample to be tested for the presence of target microorganisms;
- c.) incubating the inoculated medium under conditions suitable for the growth of target microorganisms wherein the enzyme substrate is capable of being acted upon by an enzyme from substantially all non-target microorganisms to produce a detectable signal; and
- d.) comparing the difference between the signal generated by conditionally detectable marker and the enzyme substrate, whereby the absence or decrease in a detectable signal indicates the presence of target microorganisms in the sample.